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Improving Body Immunity of Tourism Industry Workers During The Covid-19 Pandemic By Using Indonesian Herbal Plants

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Abstract. In 2021 is still a difficult time for tourism industries in the world due to the Covid-19 pandemic. Indonesian tourism contracted quite deeply, where there was a decrease in foreign tourists to Indonesia compared to the previous year. Based on BPS data in 2021, foreign tourist visits to Indonesia were only around 1.55 million tourists, a decrease of 61.57% compared to 2020 which amounted to 4.05 million tourists. There are many strategies taken by tourism industry players to attract tourists, including adapting new habits during the Covid-19 Pandemic and improving body immunity by vaccination, consuming healthy foods and supplement products derived from Indonesian herbal plants. The purpose of this paper is to provide information about the Indonesian herbal plants that can be used to improve body immunity of tourism industry workers during Covid-19 pandemic. The method used in this paper is literature study. The results showed that several herbal plants that could potentially be used to improve body immunity during the Covid-19 pandemic such as turmeric, ginger, Curcuma, Psidium guajava fruit, Psidium guajava leaves, Andrographis paniculata and Meniran (Phyllanthus niruri L).. These herbal plants have properties, including as an immunomodulator, anti-tuberculosis, antivirus, anti-inflammatory and antioxidant which can be used as a prevention of Covid-19 transmission.

Keywords: Indonesian Herbs, Immunity, Tourism industry

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I. Introduction

The year 2021 is still a difficult time for the world tourism industry due to the Covid-19 pandemic. There is no exception with the condition of Indonesian tourism which has contracted quite deeply, where there has been a decline in foreign tourists to Indonesia compared to the previous year. Based on BPS (Indonesian Statistics Bureau) data in 2021, foreign tourist visits to Indonesia were only about 1.55 million tourists, a decrease of 61.57% compared to 2020 which was 4.05 million tourists. This decline was caused by regulations in each country to tighten migration movements at the borders between countries to prevent the spread of the Covid-19 virus with its various mutation variants so that tourists delay their travel activities.

This decline in the number of tourists has dealt a hard blow to the tourism industry, especially for tourism workers who have been laid off to reduce business losses. Many strategies have been carried out by tourism industry players to attract tourists, including adapting new habits during the Covid-19 pandemic and increasing body immunity by vaccination, consuming healthy food and supplement products derived from herbal products from native Indonesian plants.

As is known, Indonesia is one of the countries with the largest biodiversity in the world. Among the biodiversity are agricultural plants that produce spices or medicinal plants. There are around 9600 types of medicinal plants that have been known to have efficacy, while of that amount that has been processed by the herbal industry, only about 250 species (Suharmiati, 2007). Spices in Indonesia are well known in the world for their good quality. These spice products are used by the Indonesian people as raw materials for cooking spices, traditional herbs, medicines and cosmetics. From export trade, Indonesian spices contribute about 23.70% of total world exports with a foreign exchange value of around Rp. 1.3 trillion per year from trading in main spice commodities such as pepper, nutmeg, vanilla, cinnamon and cloves (Rifai, 2021).

According to Hambali (2005), herbal products are products derived from herbal plants with certain properties in helping the treatment of a disease as well as refreshing the body. The use of herbal plants as alternative food supplements that contain efficacy is increasing because they are perceived as safe products for consumption and do not cause side effects because they are natural. According to BPPT (2006), there are several things that cause herbal products to be preferred, among them are these products are believed to be safer, can be used for the whole family, in line with community habits and beliefs such as herbs and their properties which

are known to be quite effective at affordable price. Based on this, The purpose of this paper is to provide information about the Indonesian herbal plants that can be used to improve body immunity of tourism industry workers during Covid-19 pandemic.

II. Research Methodology

The method used in this paper is a study of literature related to Indonesian herbal plants which are possible to improve the body's immunity of tourism industry workers during the Covid-19 Pandemic. This literature study is used to find out various herbal plants that can improve body immunity.

III. Result and Discussion

3.1. Tourism Industry

The tourism industry is one of the sectors supporting economic growth that generates foreign exchange and creates many jobs, both formal and informal. According to UNWTO (United Nations World Tourism Organization), the tourism industry includes accommodation for visitors, food and beverage service activities, passenger transportation, travel agents and other reservation activities, cultural activities, sports and entertainment activities. Meanwhile, according to the Tourism Law number 10 of 2009, the tourism industry is a collection of tourism businesses that are interrelated in order to produce goods and/or services to meet the needs of tourists in the implementation of tourism.

The scope of the tourism industry includes restaurants, lodging, travel services, transportation, entertainment facilities, tourist attraction facilities and cultural activities. Each scope of the tourism industry sector is related to services that require good interaction between tourists and tourism industry workers. The tourism industry players who provide the best service will excel in the tourism business competition. Especially the tourism business competition during the current Covid-19 pandemic where the tourism market is sluggish due to restrictions on community activities.

To survive during this Covid-19 pandemic, tourism industries must be creative and implement strict health protocols to provide health security guarantees for tourists. Some of the health protocols that have been carried out by tourism business actors include using personal protective equipment, using disinfectant liquid to clean facilities, checking body temperature and visitor health protocols, checking visitor health certificates, and so on. Most of what tourism industry workers do is protection from outside the body, while viruses are an invisible species and can enter the body unnoticed. For this reason, defense from within the tourism industry workers is needed by vaccination, consuming healthy food, getting enough rest and taking supplements that increase the body's immunity. Supplements to increase the body's immunity can be obtained from Indonesian herbal plants that are already circulating in the market at affordable prices.

3.2. Herbal Plants

Herbal plants are plants or parts of plants that contain medicinal properties. Herbal plants that are mostly used are in the form of simplicia or dried plant parts. The Food and Drug Supervisory Agency of Indonesia (BPOM) stipulates 3 categories of natural medicinal preparations, namely herbs, standardized herbs and phytopharmaceuticals. Herbs is a natural preparation with medicinal plant raw materials in simple forms whose efficacy is based on empirical data or experience from generation to generation. Meanwhile, standardized herbs are natural medicinal preparations that have been standardized and passed pre-clinical tests (efficacy and toxicity tests on experimental animals). And phytopharmaceuticals are natural preparations with medicinal plant raw materials that have been standardized and passed pre-clinical and clinical trials.

This herbal plant is widely used by the community as traditional medicine which consists of a mixture of various compounds so that the healing effect is based on the cumulative effects caused by various compounds contained in traditional medicinal herbs. The healing function of traditional medicine comes from an increase in body resistance caused by the effects of compounds contained in these traditional medicinal ingredients. So that the main function of traditional medicine is for rehabilitation, improving the quality of health (promotive) and disease prevention (preventive) (Puspitarini, 2009).

3.3. Indonesian Herbal Plants With The Potential To Improve Body Immunity

During this Covid-19 pandemic, people must increase their body immunity so that the body is strong from the attack of the virus. Especially the tourism industry workers who often meet face to face with many people and have the potential to contract the Covid-19 virus. The use of personal protective equipment (PPE) is not enough to protect the body from virus attacks if it is not used properly. Besides that, self-defense is also needed from the body by vaccination, consuming healthy foods and supplements to increase the body's immunity. There are several herbal plants that can be used to increase body immunity during the Covid-19 pandemic, including Turmeric, Ginger, Curcuma, Psidium guajava fruit, Psidium guajava leaves, Andrographis

paniculata and Meniran (*Phyllanthus niruri L.*) (BPOM, 2020). Based on scientific research, these herbal plants have been proven to have health benefits to deal with Covid-19.

Turmeric (*Curcuma longa L.*) contains chemical compounds, namely carbohydrates (69.4%), curcuminoids (a mixture of curcumin, demethoxycurcumin and bisdemethoxycurcumin) and essential oils (5.8%) (Galen et al., 2018). Empirical evidence shows that fresh rhizome juice can be applied to skin infections (Guzman et al., 1999). Turmeric rhizome is also said to have the property of relieving various inflammations, rheumatism, stomach pain, liver disease, kidney stones and cleaning menstruation (Heyne, 1987). Based on other studies, turmeric has properties as antiviral, anti-inflammatory and antioxidant (BPOM, 2020).

Ginger (*Zingiber officinale Roscoe*) contains essential oils (1 - 4%), vitamin A, vitamin B, vitamin C, fat, protein, starch, organic acids, resin, zingeron, cineol and oleoresin. Empirical evidence shows that grated ginger rhizome is used as a topical medication to treat swelling, rheumatism and headaches. While scientific evidence shows that ginger has properties as an immunomodulator and anti-inflammatory (BPOM, 2020).

Curcuma (*Curcuma xanthorrhiza Roxb.*) contains curcuminoids (1 – 2%) and essential oils with xanthorrhizol components (31.9%), -curcumene (17.1%), arcurcumene (13.2%), camphor (5.4%), - curcumene (2.6%), (Z)-γ-bisabolene (2.6%) and (E)-β-farnesene (1.2%) (Galen & Kroes, 2014; Rajkumari & Sanatombi, 2018). Empirical evidence shows that Curcuma has been used for generations in Indonesia to treat various stomach complaints and liver disorders, fever and constipation, galactagogue, bloody diarrhea, dysentery, rectal inflammation, hemorrhoids, gastric disorders caused by cold, infected wounds, skin eruptions, acne vulgaris, eczema, smallpox and anorexia as well as to reduce uterine inflammation after childbirth (Prakoso et al. 2016). While scientific evidence shows that Curcuma is efficacious as an immunostimulant, antioxidant and anti-inflammatory (BPOM, 2020).

Guava fruit (*Psidium guajava L.*) contains vitamin C, vitamin A, iron, phosphorus, calcium, flavonoids and polyphenol groups (Lin et al., 2016). Guava fruit has high levels of polyphenols such as myricetin and apigenin compounds, elegat acid, and anthocyanins (Laily et al., 2015). In addition, guava fruit also contains terpenoids (triterpenes and carotenoids), flavonols, tannins and phenolic acid derivatives (Konig et al., 2019). Based on scientific evidence, guava fruit has antioxidant and anti-inflammatory properties (BPOM, 2020).

Guava leaves (*Psidium guajava L.*) contain the flavonoids quercetin, guajaverin and other quercetin glycosides, gallocatechin and tannins elegat acid and guavin A, C and D and essential oils. Based on empirical evidence, guava leaves are efficacious for anti-diarrhea, antibacterial, anti-HIV, antioxidant and antiseptic. While scientific evidence shows guava leaves as immunostimulant, antiviral, anti-inflammatory and antiseptic (BPOM, 2020).

Andrographis paniculata (*Andrographis paniculata (Burm.f) Wallex Nees.*) contains chemical compounds terpenoid lactones, alkaloids, carbohydrates, resins, saponins, flavonoids, steroids, glycosides and tannins (Agrawal & Pandey, 2019). Empirical evidence shows that Andrographis paniculata is efficacious for bacillary dysentery, bronchitis, ulcers, intestinal inflammation, cough, fever, eczema, burns, hepatitis, malaria, chickenpox and mouth sores (WHO, 2002). While scientific evidence shows that Andrographis paniculata is efficacious as an immunomodulator, antiviral, antioxidant, anti-inflammatory and upper respiratory tract treatment (BPOM, 2020).

Meniran (*Phyllanthus niruri L.*) contains chemical compounds of tannins, resins, potassium, flavonoids and lignans. Empirical evidence proves that Meniran is efficacious for the treatment of epilepsy, malaria, constipation, high blood pressure, irregular menstruation, canker sores, heartburn, tooth pain, urinary incontinence, gonorrhea, kidney pain, diarrhea, fever, tetanus, dirty blood, gaga seizures, urinary stones and others (BPOM, 2020). While scientific evidence shows that Meniran is efficacious as an immunomodulator, antituberculosis, antiviral, anti-inflammatory and antioxidant (BPOM, 2020).

IV. Conclusion

During this Covid-19 Pandemic, tourism industry workers who often meet face-to-face with many people and have the potential to contract the Covid-19 virus, need control and prevention efforts so that the body's immunity remains strong. Improving the body immunity can be done by vaccination, consuming healthy foods, herbs and supplements. There are several medicinal plants/herbs that can potentially be used to increase body immunity during the Covid-19 pandemic, including Turmeric, Ginger, Curcuma, Psidium guajava fruit, Psidium guajava leaves, Andrographis paniculata and Meniran (*Phyllanthus niruri L.*). These herbal plants have properties such as immunomodulators, antituberculosis, antiviral, anti-inflammatory and antioxidant properties that can be used to prevent the transmission of Covid-19.

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